

lab2-sdeekshi.R

sdeekshi

Mon Feb 27 11:41:18 2017

```
#Author : Suchitra Deekshitula
#Purpose: Lab 2

#vector : same type of data
#List: collection( can be diff data types)
#DF = analogous to an excel spreadsheet

temp = file.choose()

my.desktop = "\\\hd.ad.syr.edu\03\adf085\Documents\""
tips = read.csv(file = temp,header = TRUE, stringsAsFactors = FALSE)

# stringsAsFactors = TRUE: takes all strings and converts them to factors(categorical data)
#default TRUE

tips
```

##	X	total_bill	tip	sex	smoker	day	time	size
## 1	1	16.99	1.01	Female	No	Sun	Dinner	2
## 2	2	10.34	1.66	Male	No	Sun	Dinner	3
## 3	3	21.01	3.50	Male	No	Sun	Dinner	3
## 4	4	23.68	3.31	Male	No	Sun	Dinner	2
## 5	5	24.59	3.61	Female	No	Sun	Dinner	4
## 6	6	25.29	4.71	Male	No	Sun	Dinner	4
## 7	7	8.77	2.00	Male	No	Sun	Dinner	2
## 8	8	26.88	3.12	Male	No	Sun	Dinner	4
## 9	9	15.04	1.96	Male	No	Sun	Dinner	2
## 10	10	14.78	3.23	Male	No	Sun	Dinner	2
## 11	11	10.27	1.71	Male	No	Sun	Dinner	2
## 12	12	35.26	5.00	Female	No	Sun	Dinner	4
## 13	13	15.42	1.57	Male	No	Sun	Dinner	2
## 14	14	18.43	3.00	Male	No	Sun	Dinner	4
## 15	15	14.83	3.02	Female	No	Sun	Dinner	2
## 16	16	21.58	3.92	Male	No	Sun	Dinner	2
## 17	17	10.33	1.67	Female	No	Sun	Dinner	3
## 18	18	16.29	3.71	Male	No	Sun	Dinner	3
## 19	19	16.97	3.50	Female	No	Sun	Dinner	3
## 20	20	20.65	3.35	Male	No	Sat	Dinner	3
## 21	21	17.92	4.08	Male	No	Sat	Dinner	2
## 22	22	20.29	2.75	Female	No	Sat	Dinner	2
## 23	23	15.77	2.23	Female	No	Sat	Dinner	2
## 24	24	39.42	7.58	Male	No	Sat	Dinner	4
## 25	25	19.82	3.18	Male	No	Sat	Dinner	2
## 26	26	17.81	2.34	Male	No	Sat	Dinner	4
## 27	27	13.37	2.00	Male	No	Sat	Dinner	2
## 28	28	12.69	2.00	Male	No	Sat	Dinner	2
## 29	29	21.70	4.30	Male	No	Sat	Dinner	2
## 30	30	19.65	3.00	Female	No	Sat	Dinner	2
## 31	31	9.55	1.45	Male	No	Sat	Dinner	2
## 32	32	18.35	2.50	Male	No	Sat	Dinner	4
## 33	33	15.06	3.00	Female	No	Sat	Dinner	2
## 34	34	20.69	2.45	Female	No	Sat	Dinner	4
## 35	35	17.78	3.27	Male	No	Sat	Dinner	2
## 36	36	24.06	3.60	Male	No	Sat	Dinner	3
## 37	37	16.31	2.00	Male	No	Sat	Dinner	3
## 38	38	16.93	3.07	Female	No	Sat	Dinner	3
## 39	39	18.69	2.31	Male	No	Sat	Dinner	3
## 40	40	31.27	5.00	Male	No	Sat	Dinner	3
## 41	41	16.04	2.24	Male	No	Sat	Dinner	3
## 42	42	17.46	2.54	Male	No	Sun	Dinner	2
## 43	43	13.94	3.06	Male	No	Sun	Dinner	2
## 44	44	9.68	1.32	Male	No	Sun	Dinner	2
## 45	45	30.40	5.60	Male	No	Sun	Dinner	4
## 46	46	18.29	3.00	Male	No	Sun	Dinner	2
## 47	47	22.23	5.00	Male	No	Sun	Dinner	2
## 48	48	32.40	6.00	Male	No	Sun	Dinner	4
## 49	49	28.55	2.05	Male	No	Sun	Dinner	3
## 50	50	18.04	3.00	Male	No	Sun	Dinner	2
## 51	51	12.54	2.50	Male	No	Sun	Dinner	2
## 52	52	10.29	2.60	Female	No	Sun	Dinner	2

## 53	53	34.81	5.20	Female	No	Sun	Dinner	4
## 54	54	9.94	1.56	Male	No	Sun	Dinner	2
## 55	55	25.56	4.34	Male	No	Sun	Dinner	4
## 56	56	19.49	3.51	Male	No	Sun	Dinner	2
## 57	57	38.01	3.00	Male	Yes	Sat	Dinner	4
## 58	58	26.41	1.50	Female	No	Sat	Dinner	2
## 59	59	11.24	1.76	Male	Yes	Sat	Dinner	2
## 60	60	48.27	6.73	Male	No	Sat	Dinner	4
## 61	61	20.29	3.21	Male	Yes	Sat	Dinner	2
## 62	62	13.81	2.00	Male	Yes	Sat	Dinner	2
## 63	63	11.02	1.98	Male	Yes	Sat	Dinner	2
## 64	64	18.29	3.76	Male	Yes	Sat	Dinner	4
## 65	65	17.59	2.64	Male	No	Sat	Dinner	3
## 66	66	20.08	3.15	Male	No	Sat	Dinner	3
## 67	67	16.45	2.47	Female	No	Sat	Dinner	2
## 68	68	3.07	1.00	Female	Yes	Sat	Dinner	1
## 69	69	20.23	2.01	Male	No	Sat	Dinner	2
## 70	70	15.01	2.09	Male	Yes	Sat	Dinner	2
## 71	71	12.02	1.97	Male	No	Sat	Dinner	2
## 72	72	17.07	3.00	Female	No	Sat	Dinner	3
## 73	73	26.86	3.14	Female	Yes	Sat	Dinner	2
## 74	74	25.28	5.00	Female	Yes	Sat	Dinner	2
## 75	75	14.73	2.20	Female	No	Sat	Dinner	2
## 76	76	10.51	1.25	Male	No	Sat	Dinner	2
## 77	77	17.92	3.08	Male	Yes	Sat	Dinner	2
## 78	78	27.20	4.00	Male	No	Thur	Lunch	4
## 79	79	22.76	3.00	Male	No	Thur	Lunch	2
## 80	80	17.29	2.71	Male	No	Thur	Lunch	2
## 81	81	19.44	3.00	Male	Yes	Thur	Lunch	2
## 82	82	16.66	3.40	Male	No	Thur	Lunch	2
## 83	83	10.07	1.83	Female	No	Thur	Lunch	1
## 84	84	32.68	5.00	Male	Yes	Thur	Lunch	2
## 85	85	15.98	2.03	Male	No	Thur	Lunch	2
## 86	86	34.83	5.17	Female	No	Thur	Lunch	4
## 87	87	13.03	2.00	Male	No	Thur	Lunch	2
## 88	88	18.28	4.00	Male	No	Thur	Lunch	2
## 89	89	24.71	5.85	Male	No	Thur	Lunch	2
## 90	90	21.16	3.00	Male	No	Thur	Lunch	2
## 91	91	28.97	3.00	Male	Yes	Fri	Dinner	2
## 92	92	22.49	3.50	Male	No	Fri	Dinner	2
## 93	93	5.75	1.00	Female	Yes	Fri	Dinner	2
## 94	94	16.32	4.30	Female	Yes	Fri	Dinner	2
## 95	95	22.75	3.25	Female	No	Fri	Dinner	2
## 96	96	40.17	4.73	Male	Yes	Fri	Dinner	4
## 97	97	27.28	4.00	Male	Yes	Fri	Dinner	2
## 98	98	12.03	1.50	Male	Yes	Fri	Dinner	2
## 99	99	21.01	3.00	Male	Yes	Fri	Dinner	2
## 100	100	12.46	1.50	Male	No	Fri	Dinner	2
## 101	101	11.35	2.50	Female	Yes	Fri	Dinner	2
## 102	102	15.38	3.00	Female	Yes	Fri	Dinner	2
## 103	103	44.30	2.50	Female	Yes	Sat	Dinner	3
## 104	104	22.42	3.48	Female	Yes	Sat	Dinner	2
## 105	105	20.92	4.08	Female	No	Sat	Dinner	2
## 106	106	15.36	1.64	Male	Yes	Sat	Dinner	2

## 107 107	20.49	4.06	Male	Yes	Sat	Dinner	2
## 108 108	25.21	4.29	Male	Yes	Sat	Dinner	2
## 109 109	18.24	3.76	Male	No	Sat	Dinner	2
## 110 110	14.31	4.00	Female	Yes	Sat	Dinner	2
## 111 111	14.00	3.00	Male	No	Sat	Dinner	2
## 112 112	7.25	1.00	Female	No	Sat	Dinner	1
## 113 113	38.07	4.00	Male	No	Sun	Dinner	3
## 114 114	23.95	2.55	Male	No	Sun	Dinner	2
## 115 115	25.71	4.00	Female	No	Sun	Dinner	3
## 116 116	17.31	3.50	Female	No	Sun	Dinner	2
## 117 117	29.93	5.07	Male	No	Sun	Dinner	4
## 118 118	10.65	1.50	Female	No	Thur	Lunch	2
## 119 119	12.43	1.80	Female	No	Thur	Lunch	2
## 120 120	24.08	2.92	Female	No	Thur	Lunch	4
## 121 121	11.69	2.31	Male	No	Thur	Lunch	2
## 122 122	13.42	1.68	Female	No	Thur	Lunch	2
## 123 123	14.26	2.50	Male	No	Thur	Lunch	2
## 124 124	15.95	2.00	Male	No	Thur	Lunch	2
## 125 125	12.48	2.52	Female	No	Thur	Lunch	2
## 126 126	29.80	4.20	Female	No	Thur	Lunch	6
## 127 127	8.52	1.48	Male	No	Thur	Lunch	2
## 128 128	14.52	2.00	Female	No	Thur	Lunch	2
## 129 129	11.38	2.00	Female	No	Thur	Lunch	2
## 130 130	22.82	2.18	Male	No	Thur	Lunch	3
## 131 131	19.08	1.50	Male	No	Thur	Lunch	2
## 132 132	20.27	2.83	Female	No	Thur	Lunch	2
## 133 133	11.17	1.50	Female	No	Thur	Lunch	2
## 134 134	12.26	2.00	Female	No	Thur	Lunch	2
## 135 135	18.26	3.25	Female	No	Thur	Lunch	2
## 136 136	8.51	1.25	Female	No	Thur	Lunch	2
## 137 137	10.33	2.00	Female	No	Thur	Lunch	2
## 138 138	14.15	2.00	Female	No	Thur	Lunch	2
## 139 139	16.00	2.00	Male	Yes	Thur	Lunch	2
## 140 140	13.16	2.75	Female	No	Thur	Lunch	2
## 141 141	17.47	3.50	Female	No	Thur	Lunch	2
## 142 142	34.30	6.70	Male	No	Thur	Lunch	6
## 143 143	41.19	5.00	Male	No	Thur	Lunch	5
## 144 144	27.05	5.00	Female	No	Thur	Lunch	6
## 145 145	16.43	2.30	Female	No	Thur	Lunch	2
## 146 146	8.35	1.50	Female	No	Thur	Lunch	2
## 147 147	18.64	1.36	Female	No	Thur	Lunch	3
## 148 148	11.87	1.63	Female	No	Thur	Lunch	2
## 149 149	9.78	1.73	Male	No	Thur	Lunch	2
## 150 150	7.51	2.00	Male	No	Thur	Lunch	2
## 151 151	14.07	2.50	Male	No	Sun	Dinner	2
## 152 152	13.13	2.00	Male	No	Sun	Dinner	2
## 153 153	17.26	2.74	Male	No	Sun	Dinner	3
## 154 154	24.55	2.00	Male	No	Sun	Dinner	4
## 155 155	19.77	2.00	Male	No	Sun	Dinner	4
## 156 156	29.85	5.14	Female	No	Sun	Dinner	5
## 157 157	48.17	5.00	Male	No	Sun	Dinner	6
## 158 158	25.00	3.75	Female	No	Sun	Dinner	4
## 159 159	13.39	2.61	Female	No	Sun	Dinner	2
## 160 160	16.49	2.00	Male	No	Sun	Dinner	4

## 161 161	21.50	3.50	Male	No	Sun	Dinner	4
## 162 162	12.66	2.50	Male	No	Sun	Dinner	2
## 163 163	16.21	2.00	Female	No	Sun	Dinner	3
## 164 164	13.81	2.00	Male	No	Sun	Dinner	2
## 165 165	17.51	3.00	Female	Yes	Sun	Dinner	2
## 166 166	24.52	3.48	Male	No	Sun	Dinner	3
## 167 167	20.76	2.24	Male	No	Sun	Dinner	2
## 168 168	31.71	4.50	Male	No	Sun	Dinner	4
## 169 169	10.59	1.61	Female	Yes	Sat	Dinner	2
## 170 170	10.63	2.00	Female	Yes	Sat	Dinner	2
## 171 171	50.81	10.00	Male	Yes	Sat	Dinner	3
## 172 172	15.81	3.16	Male	Yes	Sat	Dinner	2
## 173 173	7.25	5.15	Male	Yes	Sun	Dinner	2
## 174 174	31.85	3.18	Male	Yes	Sun	Dinner	2
## 175 175	16.82	4.00	Male	Yes	Sun	Dinner	2
## 176 176	32.90	3.11	Male	Yes	Sun	Dinner	2
## 177 177	17.89	2.00	Male	Yes	Sun	Dinner	2
## 178 178	14.48	2.00	Male	Yes	Sun	Dinner	2
## 179 179	9.60	4.00	Female	Yes	Sun	Dinner	2
## 180 180	34.63	3.55	Male	Yes	Sun	Dinner	2
## 181 181	34.65	3.68	Male	Yes	Sun	Dinner	4
## 182 182	23.33	5.65	Male	Yes	Sun	Dinner	2
## 183 183	45.35	3.50	Male	Yes	Sun	Dinner	3
## 184 184	23.17	6.50	Male	Yes	Sun	Dinner	4
## 185 185	40.55	3.00	Male	Yes	Sun	Dinner	2
## 186 186	20.69	5.00	Male	No	Sun	Dinner	5
## 187 187	20.90	3.50	Female	Yes	Sun	Dinner	3
## 188 188	30.46	2.00	Male	Yes	Sun	Dinner	5
## 189 189	18.15	3.50	Female	Yes	Sun	Dinner	3
## 190 190	23.10	4.00	Male	Yes	Sun	Dinner	3
## 191 191	15.69	1.50	Male	Yes	Sun	Dinner	2
## 192 192	19.81	4.19	Female	Yes	Thur	Lunch	2
## 193 193	28.44	2.56	Male	Yes	Thur	Lunch	2
## 194 194	15.48	2.02	Male	Yes	Thur	Lunch	2
## 195 195	16.58	4.00	Male	Yes	Thur	Lunch	2
## 196 196	7.56	1.44	Male	No	Thur	Lunch	2
## 197 197	10.34	2.00	Male	Yes	Thur	Lunch	2
## 198 198	43.11	5.00	Female	Yes	Thur	Lunch	4
## 199 199	13.00	2.00	Female	Yes	Thur	Lunch	2
## 200 200	13.51	2.00	Male	Yes	Thur	Lunch	2
## 201 201	18.71	4.00	Male	Yes	Thur	Lunch	3
## 202 202	12.74	2.01	Female	Yes	Thur	Lunch	2
## 203 203	13.00	2.00	Female	Yes	Thur	Lunch	2
## 204 204	16.40	2.50	Female	Yes	Thur	Lunch	2
## 205 205	20.53	4.00	Male	Yes	Thur	Lunch	4
## 206 206	16.47	3.23	Female	Yes	Thur	Lunch	3
## 207 207	26.59	3.41	Male	Yes	Sat	Dinner	3
## 208 208	38.73	3.00	Male	Yes	Sat	Dinner	4
## 209 209	24.27	2.03	Male	Yes	Sat	Dinner	2
## 210 210	12.76	2.23	Female	Yes	Sat	Dinner	2
## 211 211	30.06	2.00	Male	Yes	Sat	Dinner	3
## 212 212	25.89	5.16	Male	Yes	Sat	Dinner	4
## 213 213	48.33	9.00	Male	No	Sat	Dinner	4
## 214 214	13.27	2.50	Female	Yes	Sat	Dinner	2

```
## 215 215      28.17  6.50 Female   Yes Sat Dinner  3
## 216 216      12.90  1.10 Female   Yes Sat Dinner  2
## 217 217      28.15  3.00 Male    Yes Sat Dinner  5
## 218 218      11.59  1.50 Male    Yes Sat Dinner  2
## 219 219       7.74  1.44 Male    Yes Sat Dinner  2
## 220 220      30.14  3.09 Female   Yes Sat Dinner  4
## 221 221      12.16  2.20 Male    Yes Fri Lunch   2
## 222 222      13.42  3.48 Female   Yes Fri Lunch   2
## 223 223       8.58  1.92 Male    Yes Fri Lunch   1
## 224 224      15.98  3.00 Female   No  Fri Lunch   3
## 225 225      13.42  1.58 Male    Yes Fri Lunch   2
## 226 226      16.27  2.50 Female   Yes Fri Lunch   2
## 227 227      10.09  2.00 Female   Yes Fri Lunch   2
## 228 228      20.45  3.00 Male    No  Sat Dinner  4
## 229 229      13.28  2.72 Male    No  Sat Dinner  2
## 230 230      22.12  2.88 Female   Yes Sat Dinner  2
## 231 231      24.01  2.00 Male    Yes Sat Dinner  4
## 232 232      15.69  3.00 Male    Yes Sat Dinner  3
## 233 233      11.61  3.39 Male    No  Sat Dinner  2
## 234 234      10.77  1.47 Male    No  Sat Dinner  2
## 235 235      15.53  3.00 Male    Yes Sat Dinner  2
## 236 236      10.07  1.25 Male    No  Sat Dinner  2
## 237 237      12.60  1.00 Male    Yes Sat Dinner  2
## 238 238      32.83  1.17 Male    Yes Sat Dinner  2
## 239 239      35.83  4.67 Female   No  Sat Dinner  3
## 240 240      29.03  5.92 Male    No  Sat Dinner  3
## 241 241      27.18  2.00 Female   Yes Sat Dinner  2
## 242 242      22.67  2.00 Male    Yes Sat Dinner  2
## 243 243      17.82  1.75 Male    No  Sat Dinner  2
## 244 244      18.78  3.00 Female   No Thur Dinner 2
```

```
colnames(tips)
```

```
## [1] "X"          "total_bill" "tip"        "sex"        "smoker"
## [6] "day"        "time"       "size"
```

```
View(tips)
```

```
#spreadsheet View
fix(tips)
```

```
#rows,col's
dim(tips)
```

```
## [1] 244     8
```

```
str(tips)
```

```
## 'data.frame': 244 obs. of 8 variables:
## $ X : num 1 2 3 4 5 6 7 8 9 10 ...
## $ total_bill: num 17 10.3 21 23.7 24.6 ...
## $ tip : num 1.01 1.66 3.5 3.31 3.61 4.71 2 3.12 1.96 3.23 ...
## $ sex : chr "Female" "Male" "Male" "Male" ...
## $ smoker : chr "No" "No" "No" "No" ...
## $ day : chr "Sun" "Sun" "Sun" "Sun" ...
## $ time : chr "Dinner" "Dinner" "Dinner" "Dinner" ...
## $ size : num 2 3 3 2 4 4 2 4 2 2 ...
```

```
head(tips,3)
```

```
##   X total_bill  tip    sex smoker day   time size
## 1 1     16.99 1.01 Female   No Sun Dinner 2
## 2 2     10.34 1.66   Male   No Sun Dinner 3
## 3 3     21.01 3.50   Male   No Sun Dinner 3
```

```
tail(tips)
```

```
##      X total_bill  tip    sex smoker day   time size
## 239 239     35.83 4.67 Female   No Sat Dinner 3
## 240 240     29.03 5.92   Male   No Sat Dinner 3
## 241 241     27.18 2.00 Female  Yes Sat Dinner 2
## 242 242     22.67 2.00   Male  Yes Sat Dinner 2
## 243 243     17.82 1.75   Male   No Sat Dinner 2
## 244 244     18.78 3.00 Female   No Thur Dinner 2
```

```
tips[1,]
```

```
##   X total_bill  tip    sex smoker day   time size
## 1 1     16.99 1.01 Female   No Sun Dinner 2
```

```
tips[,1]
```

```
## [1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
## [18] 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
## [35] 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51
## [52] 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68
## [69] 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85
## [86] 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102
## [103] 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119
## [120] 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136
## [137] 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153
## [154] 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170
## [171] 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187
## [188] 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204
## [205] 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221
## [222] 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238
## [239] 239 240 241 242 243 244
```

`tips[1,4]`

```
## [1] "Female"
```

`tips[3,4]`

```
## [1] "Male"
```

`tips[7:9,]`

```
##   X total_bill  tip sex smoker day    time size
## 7 7     8.77 2.00 Male   No Sun Dinner    2
## 8 8    26.88 3.12 Male   No Sun Dinner    4
## 9 9    15.04 1.96 Male   No Sun Dinner    2
```

`colnames(tips)`

```
## [1] "X"          "total_bill" "tip"        "sex"        "smoker"
## [6] "day"       "time"      "size"
```

`tips[, "total_bill"]`

```
## [1] 16.99 10.34 21.01 23.68 24.59 25.29 8.77 26.88 15.04 14.78 10.27
## [12] 35.26 15.42 18.43 14.83 21.58 10.33 16.29 16.97 20.65 17.92 20.29
## [23] 15.77 39.42 19.82 17.81 13.37 12.69 21.70 19.65 9.55 18.35 15.06
## [34] 20.69 17.78 24.06 16.31 16.93 18.69 31.27 16.04 17.46 13.94 9.68
## [45] 30.40 18.29 22.23 32.40 28.55 18.04 12.54 10.29 34.81 9.94 25.56
## [56] 19.49 38.01 26.41 11.24 48.27 20.29 13.81 11.02 18.29 17.59 20.08
## [67] 16.45 3.07 20.23 15.01 12.02 17.07 26.86 25.28 14.73 10.51 17.92
## [78] 27.20 22.76 17.29 19.44 16.66 10.07 32.68 15.98 34.83 13.03 18.28
## [89] 24.71 21.16 28.97 22.49 5.75 16.32 22.75 40.17 27.28 12.03 21.01
## [100] 12.46 11.35 15.38 44.30 22.42 20.92 15.36 20.49 25.21 18.24 14.31
## [111] 14.00 7.25 38.07 23.95 25.71 17.31 29.93 10.65 12.43 24.08 11.69
## [122] 13.42 14.26 15.95 12.48 29.80 8.52 14.52 11.38 22.82 19.08 20.27
## [133] 11.17 12.26 18.26 8.51 10.33 14.15 16.00 13.16 17.47 34.30 41.19
## [144] 27.05 16.43 8.35 18.64 11.87 9.78 7.51 14.07 13.13 17.26 24.55
## [155] 19.77 29.85 48.17 25.00 13.39 16.49 21.50 12.66 16.21 13.81 17.51
## [166] 24.52 20.76 31.71 10.59 10.63 50.81 15.81 7.25 31.85 16.82 32.90
## [177] 17.89 14.48 9.60 34.63 34.65 23.33 45.35 23.17 40.55 20.69 20.90
## [188] 30.46 18.15 23.10 15.69 19.81 28.44 15.48 16.58 7.56 10.34 43.11
## [199] 13.00 13.51 18.71 12.74 13.00 16.40 20.53 16.47 26.59 38.73 24.27
## [210] 12.76 30.06 25.89 48.33 13.27 28.17 12.90 28.15 11.59 7.74 30.14
## [221] 12.16 13.42 8.58 15.98 13.42 16.27 10.09 20.45 13.28 22.12 24.01
## [232] 15.69 11.61 10.77 15.53 10.07 12.60 32.83 35.83 29.03 27.18 22.67
## [243] 17.82 18.78
```

`tips[,2]`

```
## [1] 16.99 10.34 21.01 23.68 24.59 25.29 8.77 26.88 15.04 14.78 10.27
## [12] 35.26 15.42 18.43 14.83 21.58 10.33 16.29 16.97 20.65 17.92 20.29
## [23] 15.77 39.42 19.82 17.81 13.37 12.69 21.70 19.65 9.55 18.35 15.06
## [34] 20.69 17.78 24.06 16.31 16.93 18.69 31.27 16.04 17.46 13.94 9.68
## [45] 30.40 18.29 22.23 32.40 28.55 18.04 12.54 10.29 34.81 9.94 25.56
## [56] 19.49 38.01 26.41 11.24 48.27 20.29 13.81 11.02 18.29 17.59 20.08
## [67] 16.45 3.07 20.23 15.01 12.02 17.07 26.86 25.28 14.73 10.51 17.92
## [78] 27.20 22.76 17.29 19.44 16.66 10.07 32.68 15.98 34.83 13.03 18.28
## [89] 24.71 21.16 28.97 22.49 5.75 16.32 22.75 40.17 27.28 12.03 21.01
## [100] 12.46 11.35 15.38 44.30 22.42 20.92 15.36 20.49 25.21 18.24 14.31
## [111] 14.00 7.25 38.07 23.95 25.71 17.31 29.93 10.65 12.43 24.08 11.69
## [122] 13.42 14.26 15.95 12.48 29.80 8.52 14.52 11.38 22.82 19.08 20.27
## [133] 11.17 12.26 18.26 8.51 10.33 14.15 16.00 13.16 17.47 34.30 41.19
## [144] 27.05 16.43 8.35 18.64 11.87 9.78 7.51 14.07 13.13 17.26 24.55
## [155] 19.77 29.85 48.17 25.00 13.39 16.49 21.50 12.66 16.21 13.81 17.51
## [166] 24.52 20.76 31.71 10.59 10.63 50.81 15.81 7.25 31.85 16.82 32.90
## [177] 17.89 14.48 9.60 34.63 34.65 23.33 45.35 23.17 40.55 20.69 20.90
## [188] 30.46 18.15 23.10 15.69 19.81 28.44 15.48 16.58 7.56 10.34 43.11
## [199] 13.00 13.51 18.71 12.74 13.00 16.40 20.53 16.47 26.59 38.73 24.27
## [210] 12.76 30.06 25.89 48.33 13.27 28.17 12.90 28.15 11.59 7.74 30.14
## [221] 12.16 13.42 8.58 15.98 13.42 16.27 10.09 20.45 13.28 22.12 24.01
## [232] 15.69 11.61 10.77 15.53 10.07 12.60 32.83 35.83 29.03 27.18 22.67
## [243] 17.82 18.78
```

`tips$total_bill`

```
## [1] 16.99 10.34 21.01 23.68 24.59 25.29 8.77 26.88 15.04 14.78 10.27
## [12] 35.26 15.42 18.43 14.83 21.58 10.33 16.29 16.97 20.65 17.92 20.29
## [23] 15.77 39.42 19.82 17.81 13.37 12.69 21.70 19.65 9.55 18.35 15.06
## [34] 20.69 17.78 24.06 16.31 16.93 18.69 31.27 16.04 17.46 13.94 9.68
## [45] 30.40 18.29 22.23 32.40 28.55 18.04 12.54 10.29 34.81 9.94 25.56
## [56] 19.49 38.01 26.41 11.24 48.27 20.29 13.81 11.02 18.29 17.59 20.08
## [67] 16.45 3.07 20.23 15.01 12.02 17.07 26.86 25.28 14.73 10.51 17.92
## [78] 27.20 22.76 17.29 19.44 16.66 10.07 32.68 15.98 34.83 13.03 18.28
## [89] 24.71 21.16 28.97 22.49 5.75 16.32 22.75 40.17 27.28 12.03 21.01
## [100] 12.46 11.35 15.38 44.30 22.42 20.92 15.36 20.49 25.21 18.24 14.31
## [111] 14.00 7.25 38.07 23.95 25.71 17.31 29.93 10.65 12.43 24.08 11.69
## [122] 13.42 14.26 15.95 12.48 29.80 8.52 14.52 11.38 22.82 19.08 20.27
## [133] 11.17 12.26 18.26 8.51 10.33 14.15 16.00 13.16 17.47 34.30 41.19
## [144] 27.05 16.43 8.35 18.64 11.87 9.78 7.51 14.07 13.13 17.26 24.55
## [155] 19.77 29.85 48.17 25.00 13.39 16.49 21.50 12.66 16.21 13.81 17.51
## [166] 24.52 20.76 31.71 10.59 10.63 50.81 15.81 7.25 31.85 16.82 32.90
## [177] 17.89 14.48 9.60 34.63 34.65 23.33 45.35 23.17 40.55 20.69 20.90
## [188] 30.46 18.15 23.10 15.69 19.81 28.44 15.48 16.58 7.56 10.34 43.11
## [199] 13.00 13.51 18.71 12.74 13.00 16.40 20.53 16.47 26.59 38.73 24.27
## [210] 12.76 30.06 25.89 48.33 13.27 28.17 12.90 28.15 11.59 7.74 30.14
## [221] 12.16 13.42 8.58 15.98 13.42 16.27 10.09 20.45 13.28 22.12 24.01
## [232] 15.69 11.61 10.77 15.53 10.07 12.60 32.83 35.83 29.03 27.18 22.67
## [243] 17.82 18.78
```

```
tips.2 = tips[,c("total_bill","tip")]
tips.2
```

```
##      total_bill     tip
## 1        16.99   1.01
## 2        10.34   1.66
## 3        21.01   3.50
## 4        23.68   3.31
## 5        24.59   3.61
## 6        25.29   4.71
## 7         8.77   2.00
## 8        26.88   3.12
## 9        15.04   1.96
## 10       14.78   3.23
## 11       10.27   1.71
## 12       35.26   5.00
## 13       15.42   1.57
## 14       18.43   3.00
## 15       14.83   3.02
## 16       21.58   3.92
## 17       10.33   1.67
## 18       16.29   3.71
## 19       16.97   3.50
## 20       20.65   3.35
## 21       17.92   4.08
## 22       20.29   2.75
## 23       15.77   2.23
## 24       39.42   7.58
## 25       19.82   3.18
## 26       17.81   2.34
## 27       13.37   2.00
## 28       12.69   2.00
## 29       21.70   4.30
## 30       19.65   3.00
## 31        9.55   1.45
## 32       18.35   2.50
## 33       15.06   3.00
## 34       20.69   2.45
## 35       17.78   3.27
## 36       24.06   3.60
## 37       16.31   2.00
## 38       16.93   3.07
## 39       18.69   2.31
## 40       31.27   5.00
## 41       16.04   2.24
## 42       17.46   2.54
## 43       13.94   3.06
## 44        9.68   1.32
## 45       30.40   5.60
## 46       18.29   3.00
## 47       22.23   5.00
## 48       32.40   6.00
## 49       28.55   2.05
## 50       18.04   3.00
## 51       12.54   2.50
## 52       10.29   2.60
```

## 53	34.81	5.20
## 54	9.94	1.56
## 55	25.56	4.34
## 56	19.49	3.51
## 57	38.01	3.00
## 58	26.41	1.50
## 59	11.24	1.76
## 60	48.27	6.73
## 61	20.29	3.21
## 62	13.81	2.00
## 63	11.02	1.98
## 64	18.29	3.76
## 65	17.59	2.64
## 66	20.08	3.15
## 67	16.45	2.47
## 68	3.07	1.00
## 69	20.23	2.01
## 70	15.01	2.09
## 71	12.02	1.97
## 72	17.07	3.00
## 73	26.86	3.14
## 74	25.28	5.00
## 75	14.73	2.20
## 76	10.51	1.25
## 77	17.92	3.08
## 78	27.20	4.00
## 79	22.76	3.00
## 80	17.29	2.71
## 81	19.44	3.00
## 82	16.66	3.40
## 83	10.07	1.83
## 84	32.68	5.00
## 85	15.98	2.03
## 86	34.83	5.17
## 87	13.03	2.00
## 88	18.28	4.00
## 89	24.71	5.85
## 90	21.16	3.00
## 91	28.97	3.00
## 92	22.49	3.50
## 93	5.75	1.00
## 94	16.32	4.30
## 95	22.75	3.25
## 96	40.17	4.73
## 97	27.28	4.00
## 98	12.03	1.50
## 99	21.01	3.00
## 100	12.46	1.50
## 101	11.35	2.50
## 102	15.38	3.00
## 103	44.30	2.50
## 104	22.42	3.48
## 105	20.92	4.08
## 106	15.36	1.64

## 107	20.49	4.06
## 108	25.21	4.29
## 109	18.24	3.76
## 110	14.31	4.00
## 111	14.00	3.00
## 112	7.25	1.00
## 113	38.07	4.00
## 114	23.95	2.55
## 115	25.71	4.00
## 116	17.31	3.50
## 117	29.93	5.07
## 118	10.65	1.50
## 119	12.43	1.80
## 120	24.08	2.92
## 121	11.69	2.31
## 122	13.42	1.68
## 123	14.26	2.50
## 124	15.95	2.00
## 125	12.48	2.52
## 126	29.80	4.20
## 127	8.52	1.48
## 128	14.52	2.00
## 129	11.38	2.00
## 130	22.82	2.18
## 131	19.08	1.50
## 132	20.27	2.83
## 133	11.17	1.50
## 134	12.26	2.00
## 135	18.26	3.25
## 136	8.51	1.25
## 137	10.33	2.00
## 138	14.15	2.00
## 139	16.00	2.00
## 140	13.16	2.75
## 141	17.47	3.50
## 142	34.30	6.70
## 143	41.19	5.00
## 144	27.05	5.00
## 145	16.43	2.30
## 146	8.35	1.50
## 147	18.64	1.36
## 148	11.87	1.63
## 149	9.78	1.73
## 150	7.51	2.00
## 151	14.07	2.50
## 152	13.13	2.00
## 153	17.26	2.74
## 154	24.55	2.00
## 155	19.77	2.00
## 156	29.85	5.14
## 157	48.17	5.00
## 158	25.00	3.75
## 159	13.39	2.61
## 160	16.49	2.00

## 161	21.50	3.50
## 162	12.66	2.50
## 163	16.21	2.00
## 164	13.81	2.00
## 165	17.51	3.00
## 166	24.52	3.48
## 167	20.76	2.24
## 168	31.71	4.50
## 169	10.59	1.61
## 170	10.63	2.00
## 171	50.81	10.00
## 172	15.81	3.16
## 173	7.25	5.15
## 174	31.85	3.18
## 175	16.82	4.00
## 176	32.90	3.11
## 177	17.89	2.00
## 178	14.48	2.00
## 179	9.60	4.00
## 180	34.63	3.55
## 181	34.65	3.68
## 182	23.33	5.65
## 183	45.35	3.50
## 184	23.17	6.50
## 185	40.55	3.00
## 186	20.69	5.00
## 187	20.90	3.50
## 188	30.46	2.00
## 189	18.15	3.50
## 190	23.10	4.00
## 191	15.69	1.50
## 192	19.81	4.19
## 193	28.44	2.56
## 194	15.48	2.02
## 195	16.58	4.00
## 196	7.56	1.44
## 197	10.34	2.00
## 198	43.11	5.00
## 199	13.00	2.00
## 200	13.51	2.00
## 201	18.71	4.00
## 202	12.74	2.01
## 203	13.00	2.00
## 204	16.40	2.50
## 205	20.53	4.00
## 206	16.47	3.23
## 207	26.59	3.41
## 208	38.73	3.00
## 209	24.27	2.03
## 210	12.76	2.23
## 211	30.06	2.00
## 212	25.89	5.16
## 213	48.33	9.00
## 214	13.27	2.50

```
## 215    28.17  6.50
## 216    12.90  1.10
## 217    28.15  3.00
## 218    11.59  1.50
## 219     7.74  1.44
## 220    30.14  3.09
## 221    12.16  2.20
## 222    13.42  3.48
## 223     8.58  1.92
## 224    15.98  3.00
## 225    13.42  1.58
## 226    16.27  2.50
## 227    10.09  2.00
## 228    20.45  3.00
## 229    13.28  2.72
## 230    22.12  2.88
## 231    24.01  2.00
## 232    15.69  3.00
## 233    11.61  3.39
## 234    10.77  1.47
## 235    15.53  3.00
## 236    10.07  1.25
## 237    12.60  1.00
## 238    32.83  1.17
## 239    35.83  4.67
## 240    29.03  5.92
## 241    27.18  2.00
## 242    22.67  2.00
## 243    17.82  1.75
## 244    18.78  3.00
```

```
tips$sex
```

```
## [1] "Female" "Male"   "Male"   "Male"   "Female" "Male"   "Male"
## [8] "Male"   "Male"   "Male"   "Male"   "Female" "Male"   "Male"
## [15] "Female" "Male"   "Female" "Male"   "Female" "Male"   "Male"
## [22] "Female" "Female" "Male"   "Male"   "Male"   "Male"   "Male"
## [29] "Male"   "Female" "Male"   "Male"   "Female" "Female" "Male"
## [36] "Male"   "Male"   "Female" "Male"   "Male"   "Male"   "Male"
## [43] "Male"   "Male"   "Male"   "Male"   "Male"   "Male"   "Male"
## [50] "Male"   "Male"   "Female" "Female" "Male"   "Male"   "Male"
## [57] "Male"   "Female" "Male"   "Male"   "Male"   "Male"   "Male"
## [64] "Male"   "Male"   "Male"   "Female" "Female" "Male"   "Male"
## [71] "Male"   "Female" "Female" "Female" "Female" "Male"   "Male"
## [78] "Male"   "Male"   "Male"   "Male"   "Female" "Male"   "Male"
## [85] "Male"   "Female" "Male"   "Male"   "Male"   "Male"   "Male"
## [92] "Male"   "Female" "Female" "Female" "Male"   "Male"   "Male"
## [99] "Male"   "Male"   "Female" "Female" "Female" "Female" "Female"
## [106] "Male"   "Male"   "Male"   "Male"   "Female" "Male"   "Female"
## [113] "Male"   "Male"   "Female" "Female" "Male"   "Female" "Female"
## [120] "Female" "Male"   "Female" "Male"   "Male"   "Female" "Female"
## [127] "Male"   "Female" "Female" "Male"   "Male"   "Female" "Female"
## [134] "Female" "Female" "Female" "Female" "Female" "Male"   "Female"
## [141] "Female" "Male"   "Male"   "Female" "Female" "Female" "Female"
## [148] "Female" "Male"   "Male"   "Male"   "Male"   "Male"   "Male"
## [155] "Male"   "Female" "Male"   "Female" "Female" "Male"   "Male"
## [162] "Male"   "Female" "Male"   "Female" "Male"   "Male"   "Male"
## [169] "Female" "Female" "Male"   "Male"   "Male"   "Male"   "Male"
## [176] "Male"   "Male"   "Male"   "Female" "Male"   "Male"   "Male"
## [183] "Male"   "Male"   "Male"   "Male"   "Female" "Male"   "Female"
## [190] "Male"   "Male"   "Female" "Male"   "Male"   "Male"   "Male"
## [197] "Male"   "Female" "Female" "Male"   "Male"   "Female" "Female"
## [204] "Female" "Male"   "Female" "Male"   "Male"   "Male"   "Female"
## [211] "Male"   "Male"   "Male"   "Female" "Female" "Female" "Male"
## [218] "Male"   "Male"   "Female" "Male"   "Female" "Male"   "Female"
## [225] "Male"   "Female" "Female" "Male"   "Male"   "Female" "Male"
## [232] "Male"   "Male"   "Male"   "Male"   "Male"   "Male"   "Male"
## [239] "Female" "Male"   "Female" "Male"   "Male"   "Male"   "Female"
```

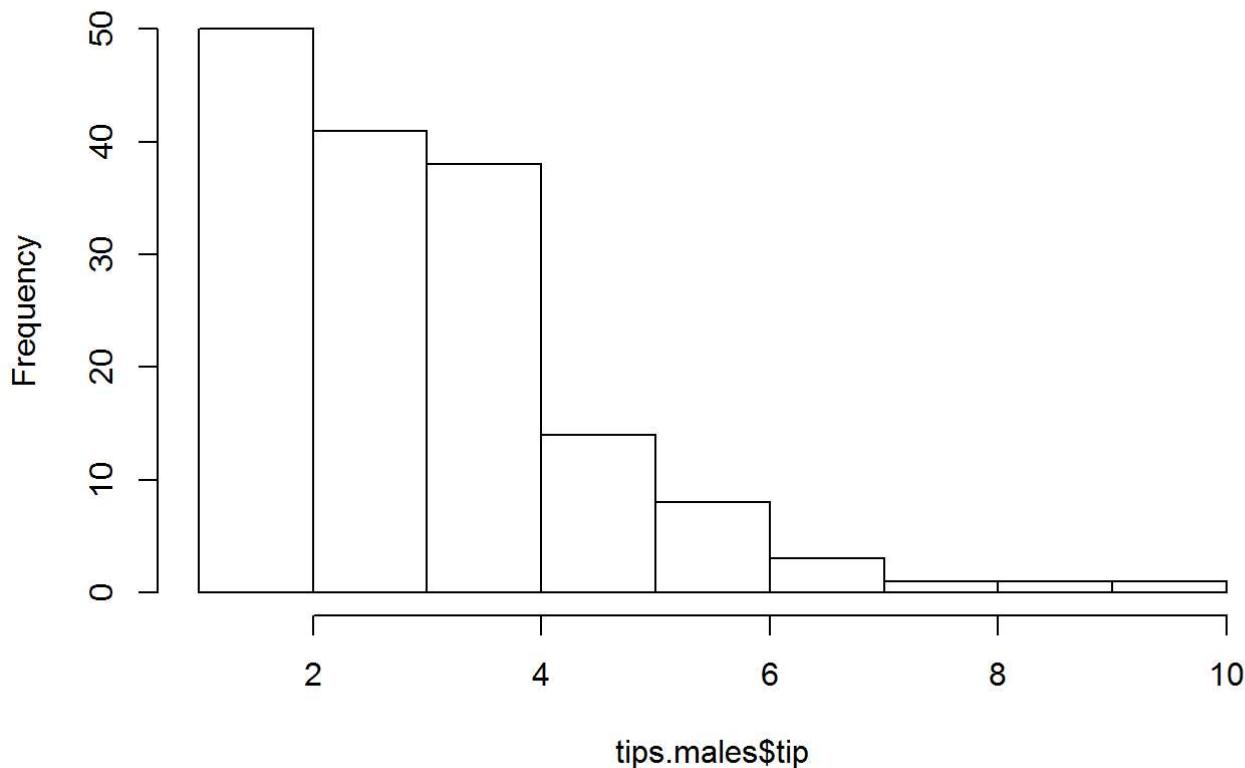
```
tips.males = tips[tips$sex == "Male",]

View(tips.males)
head(tips.males)
```

```
##   X total_bill  tip sex smoker day    time size
## 2 2     10.34 1.66 Male     No Sun Dinner 3
## 3 3     21.01 3.50 Male     No Sun Dinner 3
## 4 4     23.68 3.31 Male     No Sun Dinner 2
## 6 6     25.29 4.71 Male     No Sun Dinner 4
## 7 7      8.77 2.00 Male     No Sun Dinner 2
## 8 8     26.88 3.12 Male     No Sun Dinner 4
```

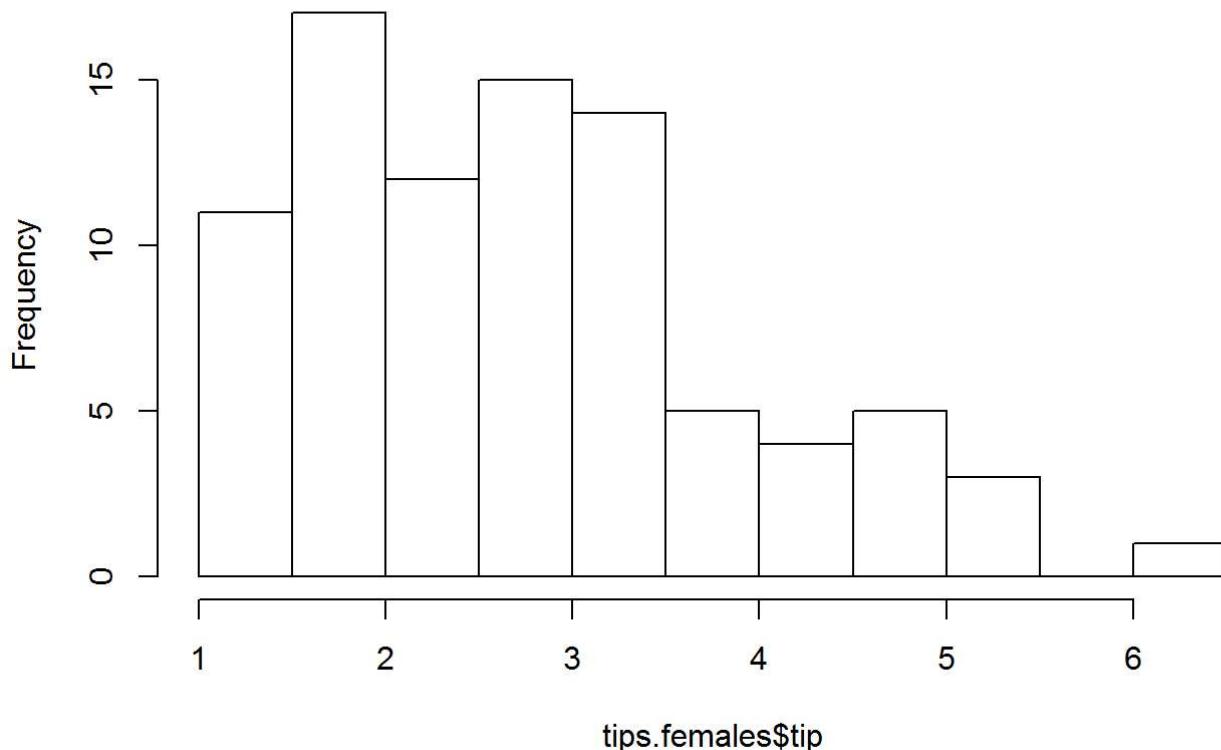
```
hist(tips.males$tip)
```

Histogram of tips.males\$tip

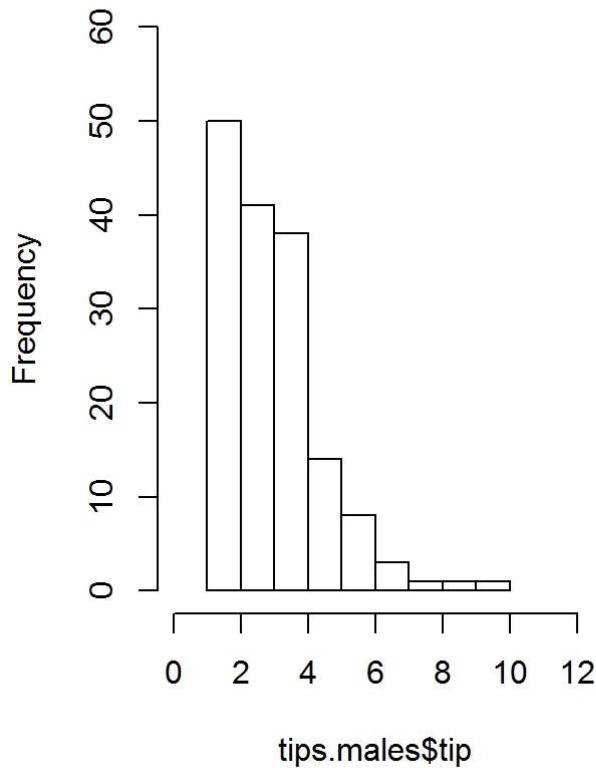
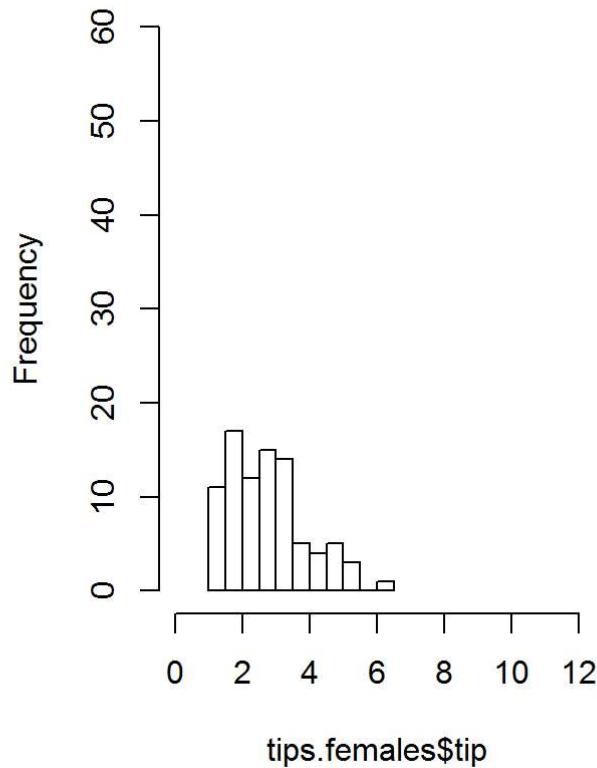


```
gals = which(tips$sex == "Female")
tips.females = tips[gals,]
hist(tips.females$tip)
```

Histogram of tips.females\$tip



```
par(mfrow =c(1,2))
hist(tips.males$tip,xlim=c(0,12),ylim=c(0,60))
hist(tips.females$tip,xlim=c(0,12),ylim=c(0,60))
```

Histogram of tips.males\$tip**Histogram of tips.females\$tip**

```
list.files(my.desktop)
```

```
## [1] "$RECYCLE.BIN"  
## [2] "3051535.csv"  
## [3] "3051535_1.csv"  
## [4] "3051535_updated.csv"  
## [5] "687_jso.R"  
## [6] "719_week_6.R"  
## [7] "art.csv"  
## [8] "bottles.png"  
## [9] "Custom Office Templates"  
## [10] "desc.html"  
## [11] "desc.R"  
## [12] "desc_stats_patent.html"  
## [13] "desc_stats_patent.R"  
## [14] "Desktop"  
## [15] "desktop.ini"  
## [16] "Documents.7z"  
## [17] "Downloads"  
## [18] "DrinksWages.csv"  
## [19] "Favorites"  
## [20] "final1.accdb"  
## [21] "genbank_mus_homo.R"  
## [22] "lab5_color.R"  
## [23] "My Music"  
## [24] "My Pictures"  
## [25] "My Shapes"  
## [26] "My Videos"  
## [27] "NetBeansProjects"  
## [28] "NetBeansProjects - Copy"  
## [29] "Patent_keyid.csv"  
## [30] "PlayOffNetwork.R"  
## [31] "plot 7.pdf"  
## [32] "R"  
## [33] "R1.png"  
## [34] "Rplot_1.png"  
## [35] "Rplot_circle.png"  
## [36] "Rplot_colors_vertices.png"  
## [37] "Rplot_csquare.png"  
## [38] "Rplot_edges_with_diff_colors (2).png"  
## [39] "Rplot_gem.png"  
## [40] "Rplot_graphopt.png"  
## [41] "Rplot_layout_fr.png"  
## [42] "Rplot_layout_dh.png"  
## [43] "Rplot_lgl.png"  
## [44] "Rplot_mds.png"  
## [45] "Rplot_pie.png"  
## [46] "Rplot_raster.png"  
## [47] "Rplot_sphere.png"  
## [48] "Rplot_vrectangle.png"  
## [49] "sales.csv"  
## [50] "shootings_1_.Rda"  
## [51] "SQL Server Management Studio"  
## [52] "suchi.Rda"  
## [53] "tips.csv"
```

```
## [54] "tweets.csv"
## [55] "Visual Studio 2015"
## [56] "W1.png"
## [57] "Wine.txt"
```

```
wine.file.name = paste(my.desktop, "Wine.txt", sep = "")
wine.file.name
```

```
## [1] "\\\hd.ad.syr.edu\03\adf085\Documents\Wine.txt"
```

```
paste("suchi", "has", "fun", sep="-")
```

```
## [1] "suchi-has-fun"
```

```
wine = read.table(wine.file.name, header = TRUE, sep="\t",
stringsAsFactors = FALSE)
```

```
dim(wine)
```

```
## [1] 10000 14
```

```
head(wine)
```

```
##      X sale.date      sales.rep rep.sex rep.region rep.feedback
## 1 9011 1/1/2010 Clement Arias      1     North        4
## 2 1962 1/1/2010 Deloras Mcfetridge      0     West        7
## 3 271  1/2/2010 Lolita Wass       0   Central        6
## 4 6495 1/2/2010 Nilda Hypolite      0   Central        6
## 5 5733 1/2/2010 Yolando Galicia      0     North        6
## 6 7108 1/2/2010 Yolando Galicia      0     North        5
##          wine  type cost unit.price units.sold receipt expenses year
## 1 Riesling white 2.097    7.94      13 103.22  4.2200 2010
## 2 Riesling white 2.097    6.99      12  83.88  4.5594 2010
## 3 Pinot Gris white 3.741   12.04      19 228.76  7.5400 2010
## 4 Riesling white 2.097    6.56      18 118.08  4.7600 2010
## 5 Chardonnay white 3.150   11.45      19 217.55  6.5500 2010
## 6 Pinot Gris white 3.741   13.42      19 254.98  8.2800 2010
```

```
colnames(wine)
```

```
## [1] "X"           "sale.date"    "sales.rep"    "rep.sex"
## [5] "rep.region"  "rep.feedback" "wine"         "type"
## [9] "cost"        "unit.price"   "units.sold"   "receipt"
## [13] "expenses"    "year"
```

```
par(mfrow=c(3,2))

hist(wine$expenses)
plot(wine$expenses)
plot(sort(wine$expenses))
boxplot(wine$expenses)
d= density(wine$expenses)
plot(d)
polygon(d,col ="orange")
```

d

```
##
## Call:
##   density.default(x = wine$expenses)
##
## Data: wine$expenses (10000 obs.)     Bandwidth 'bw' = 0.2111
##
##      x                  y
## Min. : 2.179  Min. :2.160e-06
## 1st Qu.: 5.365  1st Qu.:3.821e-03
## Median : 8.551  Median :2.070e-02
## Mean   : 8.551  Mean   :7.838e-02
## 3rd Qu.:11.738  3rd Qu.:1.629e-01
## Max.  :14.924  Max.  :2.602e-01
```

class(d)

[1] "density"

class(wine)

[1] "data.frame"

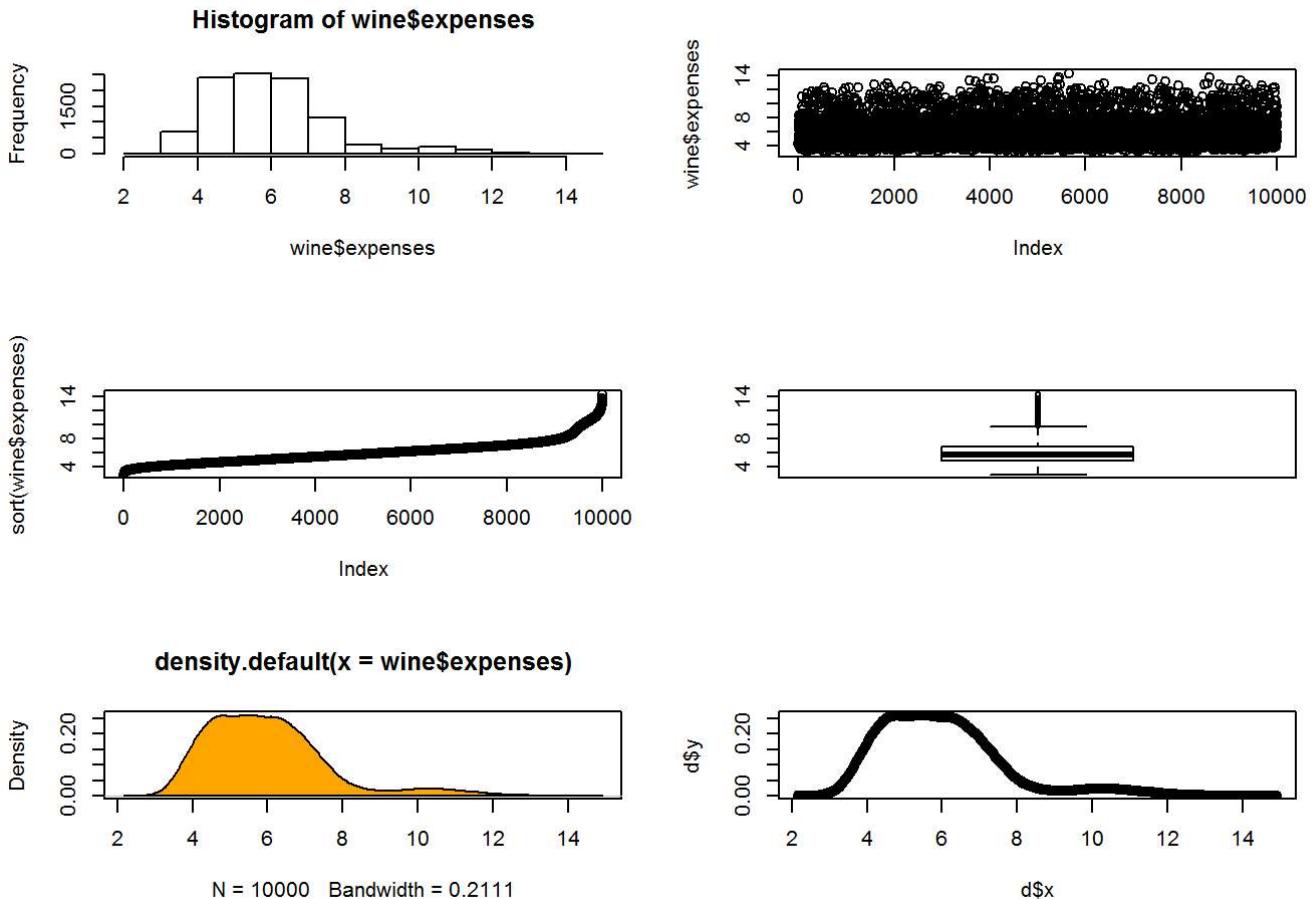
class(wine\$rep.region)

[1] "character"

attributes(d)

```
## $names
## [1] "x"          "y"          "bw"         "n"          "call"        "data.name"
## [7] "has.na"
##
## $class
## [1] "density"
```

```
plot(d$x, d$y)
```



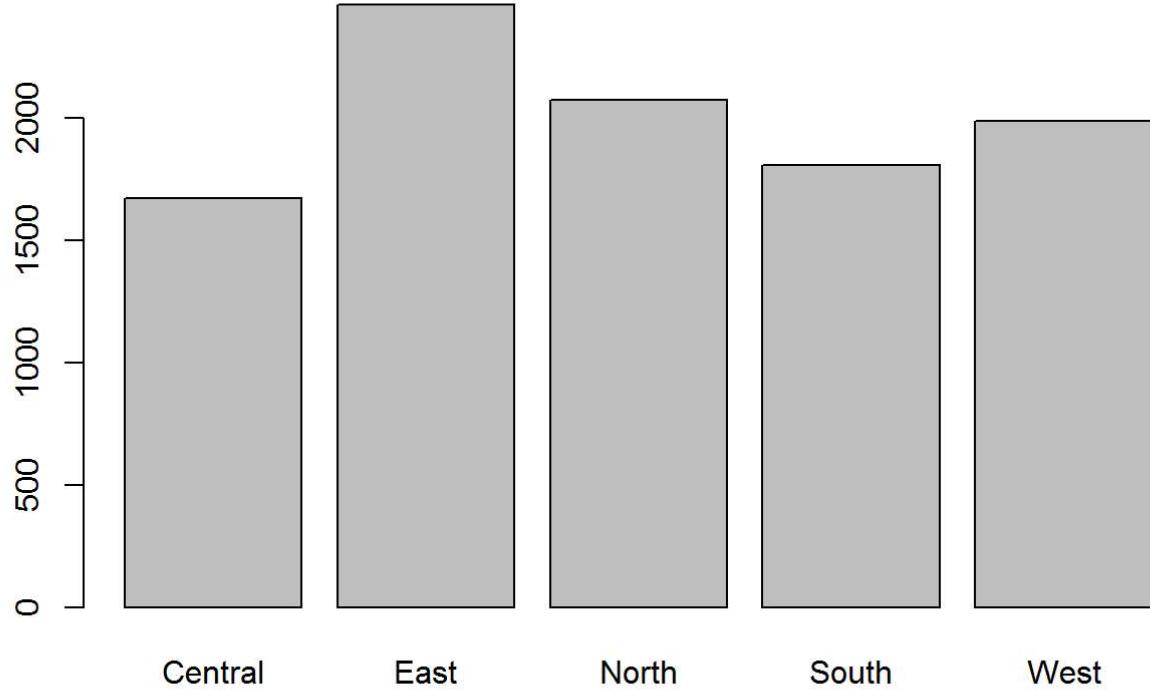
```
unique(wine$type)
```

```
## [1] "white" "red"
```

```
par(mfrow=c(1,1))
colnames(wine)
```

```
## [1] "X"           "sale.date"    "sales.rep"    "rep.sex"
## [5] "rep.region"  "rep.feedback" "wine"        "type"
## [9] "cost"         "unit.price"   "units.sold"   "receipt"
## [13] "expenses"     "year"
```

```
my.regions = table(wine$rep.region)
barplot(my.regions)
```



```
load(paste(my.desktop,"shootings_1_.Rda",sep =""))
```

```
ls()
```

```
## [1] "d"                 "gals"              "my.desktop"        "my.regions"  
## [5] "shootings"         "temp"              "tips"              "tips.2"  
## [9] "tips.females"     "tips.males"        "wine"              "wine.file.name"
```

```
save(tips,file =paste(my.desktop, "suchi.Rda", sep=""))
```